

Quarterly Report

FY - 2007

Quarterly Period Starting 1 July 2007 through 30 September 2007

4th Quarter

Highlights From the Director's Desk

Construction begins for the new CAES research facility

On Monday, July 9, the State of Idaho Division of Public Works issued its construction approval for the CAES research facility. Big-D Construction commenced site preparation and construction shortly thereafter.

The CAES research facility is sited on state of Idaho-owned property north of University Place in Idaho

Falls along the east bank of the Snake River. When completed, the CAES facility will provide infrastructure for the CAES public/private partnership that includes Boise State University (BSU), Idaho State University (ISU), the University of Idaho (U of I), and the Idaho National Laboratory (INL). Labs and offices will house CAES programs focused on advanced energy research, technology and engineering

education that include university faculty and students, national lab researchers, and industry.

Completion of the 55,000 square foot facility is scheduled for Aug. 1, 2008. As of 30 September 2007, the access road and utility corridor are complete and construction is on schedule; the foundation concrete

is nearly complete and preparations are underway to pour the floor slab early in October. A construction web cam is slated to come on-line in November 2007.



CAES Building in Progress



Excavation begins.



Excavation was completed, and foundation backfill placed.



South side foundation walls are poured and complete.



Floor support footings have been formed and are in the pour process.

Idaho Congressional Visit

On Friday, August 10, CAES briefed members of the Idaho Congressional delegation staff including Corey McDaniel, Senator Craig's Senior Energy Policy Advisor; Knut Meyerin, Senator Craig's Regional Director; and, John Revier, Congressman Simpson's Deputy Chief of Staff. The briefing focused on CAES' progress in meeting its research and educational objectives. Other topics included the Idaho National Laboratory infrastructure, the Advanced Test Reactor (ATR) National Scientific User Facility, and the Next Generation Nuclear Plant (NGNP) program.

Strategic Plans

In July CAES completed its strategic plan based on a "Balanced Scorecard" approach that features a strategy map summarizing the CAES vision, mission, customers, and strategic objectives. The map identifies specific outcomes related to three main areas: Research, Education, and Policy. Technical capabilities and critical enablers needed to support these objectives are also identified. This CAES strategic plan aligns with and supports the strategic objectives of the four CAES partner institutions. Implementation actions identified will be used to monitor

progress towards fulfilling these objectives. CAES also completed a communications matrix that identifies CAES' strategic audiences and the means to communicate with CAES stakeholders. Ongoing strategic planning activities include CAES business planning and CAES facility occupancy and management plans.

EPI Director and Assistant Professor

The CAES Energy Policy Institute (EPI) and the BSU Department of Public Policy and Administration are currently accepting applications for a permanent EPI Director and an Assistant Professor.

Review of applications will start on October 1st, 2007. Applicants are expected to have expertise in Energy and Environmental Public Policy. It is anticipated that both positions will be filled by the start of the 2008/2009 academic year.

Nuclear Engineering Designation at Idaho State University

During this quarter, the Idaho State Board of Education approved the designation of a Nuclear Engineering Department within the ISU College of Engineering.

Path Forward

During the first quarter of FY2008, CAES will:

- Host an INL nuclear science and engineering forum for new NE faculty
- Develop plans for five research initiatives focused on: Carbon and Water Management, Bioenergy, Nuclear Fuel Cycle, Energy Policy, and the ATR National Science User Facility.
- Establish working relationships among the CAES facility user groups and prepare drafts of the Occupancy and Facility Management Plans.
- Develop an industrial partnership strategy with an emphasis on technology-based economic development.

Quarterly Highlights

Infrastructure Management:

While CAES research facility construction remains on schedule, CAES partner institutions continue to build research infrastructure with CAES support. Accomplishments this quarter include:

- BSU purchased software and a database with CAES funds (\$27K) to support student and faculty nuclear fuel cycle and materials research.
- The U of I procured a glove box and peripherals (\$28.3K). Plans include relocating the equipment to the CAES building.
- The U of I procured a Tabletop Scanning Electron Microscope (SEM) for the Material Science & Engineering (MSE) Nuclear Engineering

Laboratory (\$118K). The SEM is used for analysis of nuclear materials and it provides Ethernet-based capabilities for remote operation. The SEM is small and therefore can

be located inside hoods or inert gas glove boxes to view samples without atmospheric effects. Plans include relocating the equipment to the CAES building.



Graduate students Natalie Gese (left) at the optical stereo microscope and Lucas Fowler (right) at the tabletop scanning electron microscope (SEM) UI-MSE Nuclear Engineering Laboratory.

Collaborative Relations:

Dr. George Imel joined Idaho State University on August 1 as Professor of Nuclear Engineering and Chair of the new Nuclear Engineering Department in the College of Engineering. Dr. Imel becomes the fourth new nuclear engineering faculty supported by CAES who joins ISU since November 2006.

BSU research continues supporting AFCI/GNEP and NGNP activities in nuclear fuels synthesis and alloy development. BSU principal investigators (PIs) are collaborating with technical staff at both the INL and the Los Alamos National Laboratory.

CAES exhibited at the American Nuclear Society, Global 2007: Advanced Nuclear Fuel Cycles and Systems.

Drs. Butt, Frary, and Ubig, all of BSU, have been collaborating with a number of universities and national laboratories to develop new programs. They co-authored five NERI-C proposals in collaboration with INL, Oak Ridge National Laboratory, U of I, ISU, MIT, UC Davis, Utah State University, North Carolina State University, Penn State University, University of Illinois, UNLV, and UC Berkeley.

The CAES Energy Policy Institute is currently working with a team that includes BSU and the U of I to write a proposal for the Higher Education Research Council of the Idaho State Board of Education.

CAES materials were displayed at the U.S. Women in Nuclear 2007 conference in Anaheim, California.

A new collaboration was de-

veloped between University of Nevada-Las Vegas, MIT, BSU, and INL. The team is working to investigate the creep crack growth and micro mechanical mechanisms of alloy 230 deformation for the NGNP program.

The Idaho University Nuclear Fuel Cycle Academic Center of Excellence (ACE) is planning its third annual conference for 2008. In addition to focusing on nuclear fuel cycle issues, this conference will feature a technical short course.

Research Programs Status:

CAES continued to support Patrick Callahan and Lou Bonfrisco this past quarter in their M.S. research at the BSU's Department of Materials Science and Engineering. Patrick is carrying out research on nuclear fuels synthesis. Lou is carrying out fundamental research on textural effects on nuclear-grade nickel based alloys.

CAES funding also supported BSU's undergraduate student Brandon Christopherson in nuclear fuels research. Brandon has been conducting research on the oxidation kinetics and processing of nitride fuels.

CAES funds also supported Gordon Balfour and Daniel Osterberg on their undergraduate research. Daniel Osterberg spent the summer as an intern at INL researching fuels processing and is currently engaged in nitride fuel fabrication. Dan co-authored one publication. Gordon Balfour assisted in several laboratory experiments.

Two joint appointments between ISU and INL were facilitated by CAES and ap-

proved during the quarter for Research Associate Professors Patricia Paviet-Hartmann and Thomas Hartmann. In addition, the Drs. Hartmann will directly participate in the INL Nuclear Science and Technologies Directorate.

Dr. Paviet-Hartmann continues to work on the draft Materials Control and Accountancy Plan for an aqueous reprocessing plant. In addition, Dr. Paviet-Hartmann submitted the chapter of a nuclear engineering handbook chapter she had agreed to author.

Dr. Hartmann continued to work on specification, procurement, and installation of advanced imaging equipment for the INL Hot Fuel Examination Facility at the Materials and Fuels Complex.

The CAES-sponsored LDRD program is producing high caliber research results, below is a summary of several projects:

Yoshiko Fujita, Ph.D. (INL), Chikashi Sato, Ph.D., Malcolm Shields, Ph.D., Marco Schoen, Ph.D., Alba Perez-Gracia, Ph.D. (all of Idaho State University) collaborated on the "Development of Microbial Fuel Cell (MFC), Fueled by Domestic, Agricultural, and Food Processing Wastewaters." This research built upon the experience and expertise of the ISU researchers in MFC design, construction, operation, and control systems in combination with INL expertise in developing biotechnology solutions to energy problems. Initial results of their collaborative investigation suggest that the surface area of the MFC anode is more critical than the surface area of the cathode.

They also found that increasing waste concentrations did not improve performance; rather electrical potential was greatest with the lowest strength waste. Upcoming work during FY2008 will focus on examining a number of variables, namely electrode surface areas, fuel characteristics, the characteristics of the microbial community responsible for oxidizing the fuel, and MFC operating parameters (e.g., hydraulic and bacterial cell residence times).

Tuan Tran, Ph.D. (INL), and Steffen Werner, Ph.D., and Brian Dyre, Ph.D. (both from the U of I), collaborated on "Risk Assessment Tools to Evaluate Next Generation Technical System." The PIs focused on developing a human performance and risk assessment tool using non-obtrusive physiological sensors (e.g., eye tracking,) to assess human information processing errors (e.g., loss of vigilance) and limitations (e.g., workload) for advanced energy systems early in the design process. The technical objectives for the fiscal year 2007 included: (1) formulating a "reliability" experiment design using a nuclear simulation task, (2) testing and calibrating physiological measures, (3) extending understanding of human performance physiological signatures, and (4) formulating a statistical model to translate physiological data into human error probabilities.

Robert Fox, Ph.D. and Harry Rollins, Ph.D. (both INL), and Kara Keeter, Ph.D. and Rene Rodriguez, Ph.D. (both of ISU) collaborated on the "Fabrication and Radiation Testing of Semiconductor Materials Useful as

Photovoltaic and Nuclear Detection Devices.” Thus far, a graduate student has constructed test equipment for measuring properties of solar cells and is working on a method called DLTS, Deep Level Transient Spectroscopy to look at defects in semiconductor detectors before and after irradiation. ISU also began work to improve their method of thin film deposition. Additional work was initiated to look at the solubility of other SSP’s single source precursors in supercritical fluid.

DeeEarl Vaden (INL), Jianwei Chen, Ph.D. and Michael Lineberry, Ph.D. (both of ISU), and Ayman Hawari, Ph.D. (North Carolina State University) collaborated on the “Feasibility of Using Neutron Slowing-Down-Time Spectrometer for Fast Reactor Spent Fuel Assay.” This work is developing a tool to perform nondestructive assay of spent fuel assemblies to improve the input accountancy before reprocessing. During this fiscal year, the research team simulated a “Neutron Slowing-Down Spectrometer” and developed the experimental capabilities of a neutron slowing down spectrometer.

Joni Barnes (INL), and Kevin P. Feris, Ph.D. (BSU) collaborated on the “Consolidated Bioprocessing of Agricultural Wastewater Treatment and Bioenergy Production.” Their LDRD was funded to investigate the ability of potato and sugar beet wastewater streams to support the production of photoheterotrophic Hydrogen (H₂). Their preliminary findings indicate, that with further understanding, they

may be able to develop larger-scale H₂ production systems using agricultural wastewater as a feedstock.

Laurence Hull, Ph.D. and Annette Schafer, Ph.D. (both of INL), and Scott Wood, Ph.D. (U of I) collaborated on the “Porosity Evolution during In-Situ Oil Shale Retorting.” Their research goals were to understand the evolution of porosity and the release of environmentally hazardous constituents during the in situgeneration of shale-oil from kerogen. During fiscal year 2007 they developed numerical simulation capable to predict the kinetic pyrolysis of kerogen as a function of temperature and pressure. This simulation capability will permit analysis of transport and geochemical processes expected in a thermally dominated system. They obtained core material that will be used to conduct laboratory experiments, in fiscal year 2008, to verify the computer simulations.

Tom Ulrich, Ph.D. and Jeffrey Lacey (INL), Robert Zemetra, Ph.D. (ISU), and John Carman, Ph.D. (Utah State University) worked on “Understanding Apomixis: The basis for a robust trait delivery and containment platform for bioenergy crops.” The technical objectives of this LDRD are to (1) confirm the identity of the key genes responsible for controlling apomixis in plants, (2) demonstrate that apomixis is an inducible trait by silencing these key genes; and (3) capture the intellectual property that enables us to use this technology for improving bioenergy crops in subsequent R&D efforts. During fiscal year 2007 the research progressed success-

fully to position the work to quickly correlate results from mapping and micro-array experiments.

Educational Programs:

CAES is building nuclear education opportunities statewide. During this quarter:

- The three CAES partner universities continued providing courses statewide, typically one course each semester. The courses are provided in real-time via compressed video and recorded for those students who cannot attend a specific class due to business travel, illness or personal reasons. Co-instructors from each university typically contribute to the courses within their areas of expertise.
- Dr. Chen (ISU) is teaching a new course (combined senior/first year graduate) on Monte Carlo methods in the fall 2007.
- The CAES LDRD program supported 20 Idaho university students during this quarter.
- The CAES Energy Policy Institute supported two graduate students this quarter.
- Funds from the federal appropriation, supplemented with funds from a continuing IANS-UI Endowment, provided each full-time U of I nuclear engineering graduate students with a laptop computer and educational support materials (reference texts, chart of nuclides, periodic table, career promotion handouts and posters, etc.) for the new graduate student offices in TAB 303.
- ISU’s Dr. Paviet-Hartmann is teaching a course on the chemistry and radiochemistry of the nuclear fuel cycle.
- Four ISU graduate students (Julie Chapman, Russell Jones, Javier Ortensi, and Keith Oliver) were supported with CAES funding to attend the ANS Global 2007 conference in September.
- ISU’s Dr. T. Hartmann is developing a course on crystallography for spring term 2008.
- Two ISU graduate students were provided with tuition and fees for the fall 2007 term (Jared Horkley and Julie Chapman). Mr. Horkley is working with Dr. Paviet-Hartmann and Dr. Josh Pak on the CAES LDRD project nuclear on separations. Ms. Chapman is working with Dr. Paviet-Hartmann.
- A total of ten U of I graduate students are supported by the federal appropriation this quarter.
- Drs. Steve Shropshire (ISU) and Fred Gunnerson (U of I) joined INL scientists in presenting the *2007 National Physics Teachers Workshop: Nuclear Technology Addressing Worldwide Energy Demands*, July 15-20, Idaho Falls. Approximately 40 high-school physics teachers from around the United States were provided technical lectures, demonstrations and tours related to nuclear energy. Dr. Gunnerson spoke on *Thermodynamics: What the high school science student should know to better understand nuclear energy and The Successful S&E Student*.



2007 National Physics Teachers Workshop: Nuclear Technology Addressing Worldwide Energy Demands July 15-20, Idaho Falls

Policy Programs:

EPI is currently supporting the Governor's 25x25 Renewable Energy Council to develop a baseline of renewable energy consumption and production within the state of Idaho. Michael Louis, EPI Assistant Director is also serving on the Energy Plan Directives sub-committee tasked with developing paths for promoting policies recommended by the Council.

EPI submitted a Notice Of Intent (NOI) to compete for one of six \$75K Higher Education Research Council grants from the Idaho State Board of Education. EPI's NOI was selected. EPI is currently working with a team from Boise State and the University of Idaho to write the full proposal.

EPI met with INL's Melinda Hamilton and members of the BSU Biology Department to investigate potential research opportunities in of bio-fuel development.

Program Development:

In July, ISU Professor S. Shropshire, Physics participated in the 2007 GNEP National Physics Teachers Workshop. This is the ongoing outreach effort funded by each of the three Idaho universities through monies retained by INL at the beginning of this contract.

U of I's Dr. A. Tokuhiko won

a DOE-GNEP University Readiness Program funded at \$99,000 entitled "GNEP Research and Training at KSU", with a Kansas State collaborator M. Hosni.

ISU was notified it won a GNEP Readiness award of \$100,000 from DOE. Dr. Michael Lineberry is the Principal Investigator (PI) for this effort. ISU also shared in one of the NERI C awards announced by DOE in September. This research, entitled "Risk Informed Balancing of Safety, Nonproliferation, and Economics for the Sodium Fast Reactor", is led by Dr. George Apostolakis at MIT, supported by ISU and Ohio State University. Dr. Lineberry is a co-PI on this research project.

U of I's Dr. I. Charit won a DOE-GNEP University Readiness Program funded at \$99,945 entitled "Acquisition of a 'Simultaneous Thermal Analyzer' for GNEP Research and Training at University of Idaho. A pending equipment grant worth \$55k is also encouraged through this grant.

U of I's Dr. S. Phongikaroon submitted a continuation LDRD to the INL entitled "Laser Induced Breakdown Spectroscopy: Development and Application of In-situ Elemental Analysis for Process Streams in Spent Fuel Reprocessing Facilities", with collaborators from the University of California, San Diego (S. Buckley and A. Effenberger) and from the INL (J. Giglio, S. Li, C. Morgan, and K. Carney).

U of I's Dr. S. Phongikaroon submitted a proposal to I-NERI entitled "Development of Computational Models for Pyrochemical Electrefiners of Nuclear Waste Transmuta-

tion Systems". Collaborators include Michael Simpson (INL) and Kwang-Rag Kim (Korea Atomic Energy Research Institute).

Scientific Eminence

Publications:

M.A. Smith and J. C. Freemuth, Environmental Politics and the West (rev. ed.), University Press of Colorado (2007).

B.J. Jaques, B.M. Marx, A.S. Hamdy, and D.P. Butt, "Synthesis of Uranium Nitride by a Mechanically Induced Gas-Solid Reaction." Submitted to Journal of Nuclear Materials (August 2007).

P. Callahan, B.J. Jaques, B.M. Marx, A.S. Hamdy, and D.P. Butt, "Mechanical Synthesis of Dysprosium and Cerium Nitrides." Submitted to Journal of Nuclear Materials (September 2007).

I. Charit and K.L. Murty, "Creep Behavior of Niobium-Modified Zirconium Alloys", J. Nuclear Materials (in press).

K.L. Murty and I. Charit, "Structural Materials for Gen-IV Nuclear Reactors: Challenges and Opportunities", Journal of Nuclear Materials (in press).

J. Crepeau and A. Siahpush, "Approximate Solutions to the Stefan Problem with Internal Heat Generation", Journal of Heat and Mass Transfer, (in press).

F. Poineau, T. Hartman, et al., "Separation U/Tc for UREX Process. Synthesis of Tc-Zr Waste Forms", Radiochimica Acta, (in press).

L. Ma, T. Hartman, et al., "Characterization of an Inorganic Cryptomelane Nanomaterial Synthesized by a Novel Process Using Transmission

Electron Microscopy, Electron Spectroscopy, and A-Ray Diffraction", (in preparation).

K.E. Lipinska-Kalita, T. Hartman, et.al., "High-Pressure Structural Integrity and Structural Transformations of Glass-Derived Nanocomposites: A Review", Journal of Nanocrystalline Solids (in press).

M. Epstein, P. Hartman, et al., "Thermal Stability and Safe Venting of the tri-n-butyl phosphate-nitric acid-water (Red Oil) System. I-Two Layer Systems Mass Transfer Theory", submitted to Nuclear Technology.

M. Epstein, P. Hartman, et al., "Thermal Stability and Safe Venting of the tri-n-butyl phosphate-nitric acid-water (Red Oil) System. II-Experimental Data on Reaction Self-Heat Rates and Gas Production and Their Correlation", submitted to Nuclear Technology.

M. Epstein, P. Hartman, et al., "Thermal Stability and Safe Venting of the tri-n-butyl phosphate-nitric acid-water (Red Oil) System. III-Prediction of Thermal Stability Boundaries and Required Vent Size", submitted to Nuclear Technology.

Presentations:

B.J. Jaques, D. P. Butt, "Synthesis of Dysprosium Nitride via Direct Nitridation of Dysprosium Metal." Presented at MS&T 2007, Detroit, MI, September 16-20, 2007.

P. G. Callahan, B. J. Jaques, B. M. Marx, A. S. Hamdy, D. D. Osterberg, D. P. Butt, "Synthesis of Dysprosium and Cerium Nitrides by a Mechanically Induced Gas-Solid Reaction." Presented at MS&T 2007, Detroit, MI, September 16-20, 2007.

B.J. Jaques, D. P. Butt, "Synthesis and Characterization of Actinide Nitrides." Proceedings of ANS Global 2007: Advanced Nuclear Fuel Cycles and Systems, Boise, ID, September 9-13, 2007.

K.M. Kostelnik, R.R. Grosshans, J.J. Jacobson, "Sustainable Harvest Index." Presented at the Intermountain Conference on the Environment, Pocatello, ID, September 18-19, 2007.

M. Lineberry, "Spent Fuel Accumulations and Arisings in 'Fuel User' States: Implications for a World Nuclear Partnership", Proceedings of ANS Global 2007: Advanced Nuclear Fuel Cycles and Systems, Boise, ID, September 9-13, 2007.

L. Bonfrisco and M. Frary, "The Impact of Crystal Orientation on Oxidation and Corrosion of Polycrystalline Nickel," American Association for the Advancement of Science Annual Meeting (2007).

L. Bonfrisco and M. Frary, "The Effect of Surface Orientation on the Oxidation Behavior of Nickel," The Minerals and Metals Society Annual Meeting (2008).

S. Phongikaroon, and T-S Yoo, "Identification of Statistical Invariance for Anodic Signals of Mk-IV Electrorefiner," Proceedings of ANS Global 2007: Advanced Nuclear Fuel Cycles and Systems, Boise, Idaho, September 9-13, 2007, pp. 1083-1089.

M. F. Simpson, T-S Yoo, R. W. Benedict, S. Phongikaroon, S. Frank, P. Sachdev, and K. Hartman, "Strategic Minimization of High Level Waste From Pyro-processing of Spent Nuclear Fuel," Proceedings of ANS Global 2007: Advanced Nuclear Fuel Cycles and Systems, Boise, Idaho, September 9-13, 2007, pp. 1394-1397.

S. Phongikaroon, "Identification of Statistical Invariance for Anodic Signals of Mk-IV Electrorefiner", Proceedings of ANS Global 2007: Advanced Nuclear Fuel Cycles and Systems-Pyroprocessing-II Session

F. Gunnerson, and P. Sabharwall, "Considerations of Nuclear Process Heat Transfer", Intermountain Conference on the Environment, Sept 18-19, 2007, Pocatello, ID

J. Chen and M. Lineberry, "Monte Carlo Analysis of Neutron Slowing-Down-Time Spectrometer for Fast Reactor Spent Fuel Assay", Proceedings of ANS Global 2007: Advanced Nuclear Fuel Cycles and Systems, Boise, ID, September 9-13, 2007.

P. Hartman and T. Hartman, "Optimizing Nuclear Waste Repository Development by Implementing Experimental Data on Radiolysis", Proceedings of ANS Global 2007: Advanced Nuclear Fuel Cycles and Systems, Boise, ID, September 9-13, 2007.

P. Hartman and G. Senentz, "Prevention of Pu(IV) Po-

lymerization in a PUREX Based Process", Proceedings of ANS Global 2007: Advanced Nuclear Fuel Cycles and Systems7, Boise, ID, September 9-13, 2007.

M.L. Dunzik-Gougar, et al., "Global Evaluation of Nuclear Infrastructure Utilization Scenarios", Proceedings of ANS Global 2007: Advanced Nuclear Fuel Cycles and Systems, Boise, ID, September 9-13, 2007.

G. Sandquist, J. Kunze and V. Rogers, "Nuclear and Hazardous Material Perspective", Proceedings of ANS Global 2007: Advanced Nuclear Fuel Cycles and Systems, Boise, ID, September 9-13, 2007.

J. Mahar, J. Kunze, C. Meyer and R. Loveland, "Advantages of Co-Located Spent Fuel Reprocessing, Repository and Underground Reactor Facilities", Proceedings of ANS Global 2007: Advanced Nuclear Fuel Cycles and Systems, Boise, ID, September 9-13, September 9-13, 2007.

J. Crepeau, A. Siahpush, and B. Spotten, "Comparison of Computational and Quasi-Static Solutions of Phase Change with Heat Generation", ASME-JSME Thermal Engineering Summer Heat Transfer Conference, HT2007-32162, July 8-12, 2007, Vancouver, BC, Canada.

P. Sabharwall, S. Sherman, V. Utgikar, and F. Gunnerson, "Alternative Intermediate Heat Exchanger Design for Nuclear Hydrogen Production", ANS

Annual Meeting, June 24-28, 2007, Boston, MA.

P. Kalita, T. Hartman, et al., "Uncovering Secrets of Metal Hydrides at Extreme Pressures with Synchrotron Radiation", ISU Inaugural Energy Symposium (2007).

N. Birkner, (T. Hartman), et al., "Nanostructure Mn-Oxide-Based Crystal Balls, Strings and Rods: What's in Your Oxide?" American Chemical Society, August 2007.

Recognitions, Awards, Officers in Professional Societies, others.

Dr. D. Butt (BSU) was the Student Chair for the ANS Global 2007: *Advanced Nuclear Fuel Cycles and Systems*, Boise, ID, 09/09-13/2007.

Six ISU nuclear engineering faculty attended the ANS Global 2007 conference on advanced nuclear fuel cycles in Boise, Idaho in September.

Dr. J. Crepeau (U of I) attended the ASME UAR *Engineering Professional Development*, Vancouver, BC, 07/18/07.

U of I's Drs. F. Gunnerson, A. Tokuhito, I. Charit, and students M. Figueroa & P. Sabharwall attended Global 2007: *Advanced Nuclear Fuel Cycles and Systems*, Boise, ID, 09/09-13/2007.

Dr. I. Charit (U of I) attended "*GNEP Advanced Materials Workshop*", Oak Ridge National Laboratory, 07/11-13/07.